What is claimed is:

1. An isoelectric gateway for use in the alteration of the composition of a sample, the isoelectric gateway comprising:

a first ion-permeable barrier;

a second ion-permeable barrier at a predetermined distance apart from the first ion-permeable barrier so as to define a space therebetween; and

an isoelectric substance disposed between the first and second ion-permeable barriers, wherein the isoelectric substance has a characteristic pI value and a good buffering capacity and adequate conductivity around its characteristic pI value, and wherein the ion-permeable barriers substantially prevent convective mixing between the isoelectric gateway and its environment.

2. The isoelectric gateway according to claim 1 wherein the isoelectric gateway is substantially functionally equivalent to an isoelectric membrane.

3. The isoelectric gateway according to claim 1 wherein the ion-permeable barriers substantially prevent mixing between the isoelectric gateway and its environment.

4. The isoelectric gateway according to claim 1 wherein the ion-permeable barriers are selected from the group consisting of immiscible liquids, porous solids, non-ionic membranes, isoelectric membranes, non-ionic gels, and isoelectric gels.

5. The isoelectric gateway according to claim 4 wherein the ion-permeable barriers are non-ionic membranes.

6. The isoelectric gateway according to claim 5 wherein the non-ionic membranes are unsupported membranes selected from the group consisting of cellulose esters, polysulfones, polyethersulfones and cross-linked polymethylacrylate.

7. The isoelectric gateway according to claim 5 wherein the non-ionic membranes are supported membranes selected from the group consisting of cross-linked polyacrylamide and agar supported on glass fiber, filter paper, polymeric mesh, and paper.

8. The isoelectric gateway according to claim 4 wherein the ion-permeable barriers are porous frits selected from the group consisting of glass frits, ceramic frits and polymeric frits.

9. The isoelectric gateway according to claim 1 wherein the ion-permeable barriers substantially restrict the passage of molecules having a mass greater than a predetermined size.

10. The isoelectric gateway according to claim 1 wherein the isoelectric substance is selected from the group consisting of substances containing a combination of weak acid and weak base functionalities, substances containing a combination of weak acid and strong base functionalities, and substances containing a combination of strong acid and weak base functionalities.

11. The isoelectric gateway according to claim 1 wherein the isoelectric substance is selected from the group consisting of (poly)amino (poly)carboxylic acids, (poly)amino (poly)phenols, (poly)amino (poly)phosphonic acids, (poly)amino (poly)sulfonic acids, (poly)amino (poly)phenol(poly)carboxylic acids, (poly)amino (poly)phenol(poly)phosphonic acids, (poly)amino (poly)carboxylic (poly)- phosphonic acids, (poly)amino (poly)phenol(poly)sulfonic acids, (poly)amino (poly)phenol- (poly)carboxylic(poly)sulfonic acids or (poly)amino (poly)phenol(poly)carboxylic- (poly)phosphonic(poly)sulfonic acids, (poly)imino (poly)carboxylic acids, (poly)imino (poly)phenols, (poly)imino (poly)phosphonic acids, (poly)imino (poly)sulfonic acids, (poly)imino (poly)phenol(poly)carboxylic acids, (poly)imino (poly)phenol(poly)phosphonic acids, (poly)imino (poly)carboxylic (poly)- phosphonic acids, (poly)imino (poly)phenol(poly)sulfonic acids, (poly)imino (poly)phenol- (poly)carboxylic(poly)sulfonic acids or (poly)imino (poly)phenol(poly)carboxylic- (poly)phosphonic(poly)sulfonic acids and combinations thereof.

12. The isoelectric gateway according to claim 1 wherein the isoelectric substance has a pI value ranging from about 1 to about 13.

13. The isoelectric gateway according to claim 1 wherein the isoelectric substance is a select one of stationary within the ion-permeable barriers, flowing through the ion-permeable barriers, and recirculated through the ion-permeable barriers.

14. The isoelectric gateway according to claim 1 wherein the isoelectric substance remains substantially stationary within the ion-permeable barriers.

~~15.~~ A method for altering the composition of a sample comprising:

communicating an isoelectric substance disposed between a first ion-permeable barrier and a second ion-permeable barrier to form an isoelectric gateway, wherein the isoelectric substance has a characteristic pI value and a good buffering capacity and adequate conductivity around its characteristic pI value, and wherein the ion-permeable barriers substantially prevent convective mixing between the isoelectric gateway and its environment; and

applying a selected electric potential across associated electrodes positioned on opposing sides of the isoelectric gateway to cause~~s~~ migration of at least one component through at least one of the ion-permeable barriers.

~~16.~~ An electrophoresis system for isoelectric focusing comprising:

a first electrolyte chamber containing a first electrode;

a second electrolyte chamber containing a second electrode, wherein the second electrolyte chamber is disposed relative to the first electrolyte chamber so that the electrodes are adapted to generate an electric field in an electric field area upon application of a selected electric potential between the electrodes;

a first sample chamber disposed between the first and second electrolyte chambers and proximate to the first electrolyte chamber so as to be at least partially disposed in the electric field area;

a second sample chamber disposed between the first sample chamber and the

second electrolyte chamber so as to be at least partially disposed in the electric field area;

a first isoelectric gateway separating the first electrolyte chamber and the first sample chamber, wherein the first isoelectric gateway is comprised of a first ion-permeable barrier, a second ion-permeable barrier at a predetermined distance apart from the first ion-permeable barrier so as to define a space therebetween, and a first isoelectric substance disposed between the first and second ion-permeable barriers, wherein the first isoelectric substance has a characteristic pI value and a good buffering capacity and adequate conductivity around its characteristic pI value, and wherein the first and second ion-permeable barriers substantially prevent convective mixing of the contents of the first isoelectric gateway, the first sample chamber and the first electrolyte chamber;

a first selective barrier separating the first and second sample chambers so as to impede convective mixing between the contents of the first and second sample chambers;

a second selective barrier separating the second sample chamber from the second electrolyte chamber so as to impede convective mixing between the contents of the second sample chamber and second electrolyte chamber;

means adapted for communicating an associated first electrolyte to the first electrolyte chamber;

means adapted for communicating an associated second electrolyte to the second electrolyte chamber, wherein the pH values of associated first and second electrolytes are different;

means adapted for communicating a first fluid to the first sample chamber; and

means adapted for communicating a second fluid to the second sample chamber, wherein at least one of the first and second fluids contains at least a sample; and

means adapted for applying a selected electric potential wherein application of the selected electric potential causes migration of at least one component through at least one of the ion permeable barriers.

17. The electrophoresis system according to claim 16 wherein a pH gradient is formed between the electrodes.

18. The electrophoresis system according to claim 16 wherein the first selective barrier is a second isoelectric gateway which separates the first and second sample chambers, wherein the second isoelectric gateway is comprised of a third ion-permeable barrier, a fourth ion-permeable barrier at a predetermined distance apart from the third ion-permeable barrier so as to define a space therebetween, and a second isoelectric substance disposed between the third and fourth ion-permeable barriers, wherein the second isoelectric substance has a characteristic pI value and a good buffering capacity and adequate conductivity around its characteristic pI value, and wherein the third and fourth ion-permeable barriers substantially prevent convective mixing between the contents of the second isoelectric gateway, the first sample chamber, and the second sample chamber.

19. The electrophoresis system according to claim 16 wherein the second selective barrier is a second isoelectric gateway which separates the second sample chamber from the second electrolyte chamber, wherein the second isoelectric gateway is comprised of a third ion-permeable barrier, a fourth ion-permeable barrier at a predetermined distance apart from the third ion-permeable barrier so as to define a space therebetween, and a second isoelectric substance disposed between the third and fourth ion-permeable barriers, wherein the second isoelectric substance has a characteristic pI value and a good buffering capacity and adequate conductivity around its characteristic pI value, and wherein the third and fourth ion-permeable barriers substantially prevent convective mixing between the contents of the second isoelectric gateway, the second sample chamber, and the second electrolyte chamber.

20. The electrophoresis system according to claim 16 wherein

the first selective barrier is a second isoelectric gateway which separates the first and second sample chambers, wherein the second isoelectric gateway is comprised of a third ion-permeable barrier, a fourth ion-permeable barrier at a predetermined distance apart from the third ion-permeable barrier so as to define a space therebetween, and a second isoelectric substance disposed between the third and fourth ion-permeable barriers, wherein the second isoelectric substance has a characteristic pI value and a good buffering capacity and adequate conductivity around its characteristic pI value, and wherein the third and fourth ion-permeable barriers

substantially prevent convective mixing between the contents of the second isoelectric gateway, the first sample chamber, and the second sample chamber; and

the second selective barrier is a third isoelectric gateway which separates the second sample chamber from the second electrolyte chamber, wherein the third isoelectric gateway is comprised of a fifth ion-permeable barrier, a sixth ion-permeable barrier at a predetermined distance apart from the fifth ion-permeable barrier so as to define a space therebetween, and a third isoelectric substance disposed between the fifth and sixth ion-permeable barriers, wherein the third isoelectric substance has a characteristic pI value and a good buffering capacity and adequate conductivity around its characteristic pI value, and wherein the fifth and sixth ion-permeable barriers substantially prevent convective mixing between the contents of the third isoelectric gateway, the second sample chamber, and the second electrolyte chamber.

~~21.~~ A method for isoelectric focusing comprising:

communicating a first electrolyte to a first electrolyte chamber containing a first electrode;

communicating a second electrolyte to a second electrolyte chamber containing a second electrode, wherein the second electrolyte chamber is disposed relative to the first electrolyte chamber so that the electrodes are adapted to generate an electric field in an electric field area upon application of a selected electric potential between the electrodes;

communicating a first fluid to a first sample chamber disposed between the first and second electrolyte chambers and proximate to the first electrolyte chamber so as to be at least partially disposed in the electric field area;

communicating a second fluid to a second sample chamber disposed between the first sample chamber and the second electrolyte chamber so as to be at least partially disposed in the electric field area, wherein a first isoelectric gateway separates the first electrolyte chamber and the first sample chamber, wherein the first isoelectric gateway is comprised of a first ion-permeable barrier, a second ion-permeable barrier at a predetermined distance apart from the first ion-permeable barrier so as to define a space therebetween, and a first isoelectric substance disposed between the first and second ion-permeable barriers, wherein the first isoelectric

substance has a characteristic pI value and a good buffering capacity and adequate conductivity around its characteristic pI value, and wherein the first and second ion-permeable barriers substantially prevent convective mixing between the contents of the first isoelectric gateway, the first sample chamber and the first electrolyte chamber, a first selective barrier separates the first and second sample chambers so as to impede convective mixing between the contents of the first and second sample chambers, and a second selective barrier separates the second sample chamber and the second electrolyte chamber so as to impede convective mixing between the contents of the second sample chamber and the second electrolyte chamber, wherein at least one of the first and second fluids contains a sample; and

applying the selected electric potential to cause migration of at least one selected component through at least one ion permeable barrier.

22. The method according to claim 21 wherein a pH gradient is formed between the electrodes.

23. The method according to claim 21 wherein the first selective barrier is a second isoelectric gateway which separates the first and second sample chambers, wherein the second isoelectric gateway is comprised of a third ion-permeable barrier, a fourth ion-permeable barrier at a predetermined distance apart from the third ion-permeable barrier so as to define a space therebetween, and a second isoelectric substance disposed between the third and fourth ion-permeable barriers, wherein the second isoelectric substance has a characteristic pI value and a good buffering capacity and adequate conductivity around its characteristic pI value, and wherein the third and fourth ion-permeable barriers substantially prevent convective mixing between the contents of the second isoelectric gateway, the first sample chamber, and the second sample chamber.

24. The method according to claim 21 wherein the second selective barrier is a second isoelectric gateway which separates the second sample chamber from the second electrolyte chamber, wherein the second isoelectric gateway is comprised of a third ion-permeable barrier, a fourth ion-permeable barrier at a predetermined distance apart from the third ion-permeable

barrier so as to define a space therebetween, and a second isoelectric substance disposed between the third and fourth ion-permeable barriers, wherein the second isoelectric substance has a characteristic pI value and a good buffering capacity and adequate conductivity around its characteristic pI value, and wherein the third and fourth ion-permeable barriers substantially prevent convective mixing between the contents of the second isoelectric gateway, the second sample chamber, and the second electrolyte chamber.

25. The method according to claim 21 wherein

the first selective barrier is a second isoelectric gateway which separates the first and second sample chambers, wherein the second isoelectric gateway is comprised of a third ion-permeable barrier, a fourth ion-permeable barrier at a predetermined distance apart from the third ion-permeable barrier so as to define a space therebetween, and a second isoelectric substance disposed between the third and fourth ion-permeable barriers, wherein the second isoelectric substance has a characteristic pI value and a good buffering capacity and adequate conductivity around its characteristic pI value, and wherein the third and fourth ion-permeable barriers substantially prevent convective mixing between the contents of the second isoelectric gateway, the first sample chamber, and the second sample chamber; and

the second selective barrier is a third isoelectric gateway which separates the second sample chamber from the second electrolyte chamber, wherein the third isoelectric gateway is comprised of a fifth ion-permeable barrier, a sixth ion-permeable barrier at a predetermined distance apart from the fifth ion-permeable barrier so as to define a space therebetween, and a third isoelectric substance disposed between the fifth and sixth ion-permeable barriers, wherein the third isoelectric substance has a characteristic pI value and a good buffering capacity and adequate conductivity around its characteristic pI value, and wherein the fifth and sixth ion-permeable barriers substantially prevent convective mixing between the contents of the third isoelectric gateway, the second sample chamber, and the second electrolyte chamber.